

UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF WISCONSIN  
GREEN BAY DIVISION

RYAN DeKEYSER, THOMAS COOPER, :  
HARLEY GRANIUS and CARLO LANTZ, :  
on behalf of themselves and others similarly :  
situated, :  
: Plaintiffs and Proposed :  
Collective and Class Action :  
Representatives, :  
: v. : Civil Action No. 08-C-488  
: :  
THYSSENKRUPP WAUPACA, INC. d/b/a :  
WAUPACA FOUNDRY, INC., :  
: Defendant. :  
: \_\_\_\_\_:

**DECLARATION OF DR. MARK A. ROBERTS, M.D., Ph.D., FACOEM**

I, Mark A. Roberts, declare pursuant to 28 U.S.C. § 1746 as follows:

1. My name is Mark A. Roberts. I am over 21 years of age, and I am competent to testify concerning the matters in this Declaration. I have been retained by counsel for the Defendant, ThyssenKrupp Waupaca, Inc. d/b/a Waupaca Foundry, Inc. ("Waupaca"), to provide expert opinions and testimony in the above-captioned matter.

**Background and Experience**

2. I am a Principal Scientist and Director of the Center for Occupational and Environmental Health in the Chicago office of Exponent, a scientific research and consulting company headquartered in Menlo Park, California. I have worked at Exponent since November, 2003.

3. Prior to working at Exponent, I held a series of positions with advancing responsibility in the areas of public health, occupational medicine, and academia. I was

employed at the Oklahoma State Department of Health from 1972 to 1990 and held a series of positions culminating in my appointment as the State Epidemiologist, a post that I held from 1979 to 1982 followed by the position of Consulting Medical/Environmental Epidemiologist from 1983 to 1990. In both of these capacities, I directed Oklahoma's epidemiologic investigations of a broad range of health concerns, from food-borne outbreaks to cancer clusters.

4. I was a faculty member of the Department of Preventive Medicine at the Medical College of Wisconsin from 1990 to 1997, and I completed my tenure as Associate Professor and Acting Chairman of the Department. I have also served as Corporate Medical Director for several global companies.

5. While on faculty at the Medical College of Wisconsin in Milwaukee, Wisconsin, I was part-time Medical Director for Wisconsin Centrifugal, a foundry in Waukesha, Wisconsin. In this role, I supervised Wisconsin Centrifugal's health monitoring programs, both company-mandated and OSHA-required, in addition to the day-to-day clinical aspects of the employee health service. My responsibilities included biological surveillance of the employee population as well as worksite reviews and inspections.

6. I earned a Master's degree in Education in 1972, an M.P.H. in Epidemiology and Biostatistics in 1974, and a Ph.D. in Epidemiology and Biostatistics in 1979. I completed medical school in 1986, an internship in Family Medicine in 1987, and a residency/fellowship in Occupational and Environmental Medicine in 1990. I am a Fellow of the American College of Occupational and Environmental Medicine. I have unrestricted licenses to practice medicine in Oklahoma, Wisconsin, and Illinois.

7. In addition to my employment experience, I am a past member (2000–2007) and current member (2008–2011) of the Board of Directors for the American College of

Occupational and Environmental Medicine in Arlington Heights, Illinois. I have been a member of the Board of Directors of Vysis, Inc. in Downers Grove, Illinois and the Board of Scientific Counselors for the Agency for Toxic Substances and Disease Registry in Atlanta, Georgia. In addition, I have served as an active participant on numerous state and national professional committees.

8. Attached to this Declaration as Exhibit A is a copy of my *Curriculum Vitae*.

#### **Overview of Occupational and Environmental Medicine**

9. Occupational and Environmental Medicine is a medical subspecialty that is recognized by the American Board of Medical Specialties and is one of the population-based specialties of Preventive Medicine. Specialists in this area, such as me, are physicians with advanced training in the preventative medical care of populations. Occupational and Environmental Medicine focuses on workplace/health interactions, including workplace-related illnesses and injuries, and workplace effects on non-work-related conditions.

10. Occupational and Environmental Medicine physicians are also trained to assess the possible causes of a worker's health condition. This specialty draws heavily on the key tenets of epidemiology, biostatistics, industrial hygiene, risk assessment, and toxicology. I relied extensively on my training in this field to reach my conclusions in this matter.

#### **SECTION 1. ONSITE REVIEW AND FACILITY WALK-THROUGH**

11. I completed an onsite review and facility walk-through on March 1–2, 2009 at Plants 2 and 3 in Waupaca, Wisconsin. The walk-through included observation of workstations and departments throughout the plants, inspection of the unique PPE used at various sites and departments in these facilities, as well as inspection of the employee dressing room and showering facilities. Although I understand that there are some variances in these areas from

plant to plant, the departments and workstations in all 6 Waupaca facilities are not dissimilar to what I worked with on a day to day basis while at Wisconsin Centrifugal; except on a larger scale.

12. After touring the facilities, I had discussions with Waupaca's Environmental Health and Safety (EHS) staff and covered areas relating to Hazard Communications (HazCom), Medical Surveillance, and Industrial Hygiene monitoring. These discussions and this review related to all of the Waupaca facilities since Plants 2 and 3 (which are physically connected to one another and share a melt department) also function as Waupaca's corporate headquarters. A review of several EHS documents produced by the company and my independent review of the subject matter was initiated at the time of the onsite review.

13. The information gleaned from this onsite visit, discussions with others in the sand<sup>1</sup> and foundry industry and my personal experience and training, formed the framework for the evaluation of the claims made in this case.

## **SECTION 2. REVIEW OF THE CLAIM THAT SHOWERING AND/OR CLOTHES DOFFING IS REQUIRED, OR SHOULD BE REQUIRED, TO MEET OSHA STANDARDS**

14. The claim that showering and/or clothes doffing is or should be a mandated portion of the OSHA regulations regarding silica is not supported by a review of OSHA documents. The statement from the OSHA web site is clear: "Wear disposable or washable work clothes and **shower if facilities are available**. Vacuum the dust from your clothes or change into clean clothing before leaving the work site." (emphasis added, [www.osha.gov])

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<sup>1</sup> As part of the work that I performed in this case, I spoke with knowledgeable representatives of two silica manufacturing companies and inquired whether they require showering and clothes doffing by employees on premises at the end of their work shifts. In both instances, the silica manufacturing companies informed me that no such requirements exist at their facilities, either as a corporate policy or due to some legal mandate.

The statement that employees working where silica is used should “shower if available” is repeatedly made in OSHA documents, NIOSH publications, material safety data sheets (MSDSs), and ACGIH publications.

15. There is no documentation or interpretation of these materials that makes showering or clothes change on premises a mandatory or enforceable requirement. OSHA’s recommendation to “shower if available” clearly indicates that it has considered whether showering is necessary, and elected not to make it a part of the silica standard enforcement, unlike the regulations for a number of other chemicals and elements (e.g., lead, mercury, and asbestos).

16. The statement in paragraph 17 of Plaintiffs’ “Statement of Undisputed Facts” is correct in that ThyssenKrupp has provided shower facilities for use by all employees without regard to job assignment or duty. However, these are provided as a traditional convenience and there is no company requirement that employees shower before leaving the plant, nor is there an OSHA requirement for them to shower. Indeed, if Waupaca eliminated its uniform laundering program, boarded up the entrances and exits to its locker rooms, and turned off the water in all of its showers, it would not be in violation of any federal law, or any Wisconsin, Indiana or Tennessee state law.

### **SECTION 3. CLARIFICATION REGARDING THE ROLES OF VARIOUS AGENCIES AND THE ENFORCEABILITY (OR LACK THEREOF) OF VARIOUS “STANDARDS”**

17. Although OSHA, NIOSH, and ACGIH are three important entities in the field of industrial hygiene, it is wrong to imply that they all promulgate enforceable standards. A summary of each entity is provided below, followed by a discussion of related statements in the Plaintiffs’ “Statement of Undisputed Facts.”

## **Occupational Safety and Health Administration (OSHA)**

18. The Occupational Safety and Health Act (OSHAct) of 1970 was passed by Congress "to assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources." Under the OSHAct, OSHA was established within the Department of Labor and was authorized to regulate health and safety conditions for all employers with few exceptions.

19. Under the 1970 OSHAct, OSHA was created to:

1. Encourage employers and employees to reduce workplace hazards and to implement new or improve existing safety and health standards;
2. Provide for research in occupational safety and health and develop innovative ways of dealing with occupational safety and health problems;
3. Establish "separate but dependent responsibilities and rights" for employers and employees for the achievement of better safety and health conditions;
4. Maintain a reporting and recordkeeping system to monitor job-related injuries and illnesses;
5. Establish training programs to increase the number and competence of occupational safety and health personnel; and,
6. Develop mandatory job safety and health standards and enforce them effectively.

## **The National Institute for Occupational Safety and Health (NIOSH)**

20. NIOSH is part of the Centers for Disease Control and Prevention (CDC) in the Department of Health and Human Services. NIOSH is a research-oriented agency and does not set regulation or policy.

21. The mission of NIOSH is to generate new knowledge in the field of occupational safety and health, and to transfer that knowledge into practice for the betterment of workers. To accomplish this mission, NIOSH conducts scientific research, develops guidance and recommendations, disseminates information, and responds to requests for workplace health

hazard evaluations. Information pertaining to the specific responsibilities of NIOSH are found in Section 22 of the Occupational Safety and Health Act of 1970 (29 CFR § 671).

22. In some situations, research by NIOSH has lead to changes in OSHA regulations. In contrast, NIOSH's research on silica has not led to OSHA making showering or clothes doffing on site a part of the silica regulation.

#### **The American Conference of Governmental Industrial Hygienists (ACGIH)**

23. ACGIH is a professional association of industrial hygienists and practitioners of related professions. It has no power to establish workplace standards or regulations, but instead focuses on assisting industrial hygienists in their role of evaluation of the workplace by setting consensus guides (Threshold Limit Values [TLVs]) regarding workplace exposures to a select group of physical and chemical agents in the workplace.

24. TLVs are advisory in nature, informational in content, and are intended to assist employers in providing a safe and healthful workplace through effective prevention programs adapted to the needs of each place of employment.

25. ACGIH provides TLVs for chemical substances and physical agents, and has done so since 1941. A committee of ACGIH members (Threshold Limit Values for Chemical Substances Committee) was established in 1941 and was charged with "investigating, recommending, and annually reviewing exposure limits for chemical substances." It became a standing committee in 1944. Two years later, ACGIH adopted its first list of 148 exposure limits, then referred to as Maximum Allowable Concentrations.

26. The term "Threshold Limit Values (TLV)" was introduced in 1956. The first ACGIH booklet entitled *Documentation of the Threshold Limit Values* was initially published in 1962 and has been updated on a yearly basis. Today's list of TLVs includes 642 chemical

substances and physical agents as well as 38 Biological Exposure Indices for selected chemicals. Throughout their history, TLVs have been used as guidelines to assist in the control of health hazards. These recommendations or guidelines are intended for use to assist in the control of potential workplace health hazards.

27. In certain circumstances, individuals or organizations have used the ACGIH TLVs as a supplement to their occupational safety and health program. ACGIH does not oppose their use in this manner, but ACGIH clearly makes the distinction in the literature that the TLV is not an enforceable standard.

28. In fact, ACGIH addressed silica long before OSHA was established. The initial silica enforceable standard adopted by OSHA was the TLV set by ACGIH. This was done over the strong objection of the ACGIH. ACGIH members argued that it was not their role to set standards but to provide guidance to industrial hygienists whose role it was to help industry evaluate the workplace and provide a safe work environment.

29. Plaintiffs' "Statement of Undisputed Facts" does not include the fact that ACGIH does not comment on showering or clothes doffing where silica is used.

30. Thus, it is clear that paragraph 39 of the Plaintiffs' Statement of Undisputed Facts" is incorrect. There are not "three standards for the safety of airborne silica dust." OSHA has enforceable regulations, NIOSH has made general industry recommendations that do not carry the force of law, and ACGIH has published guidelines for industrial hygienists to consider in the evaluation of a worksite. Neither NIOSH nor ACGIH establish enforceable standards.

31. I have also reviewed Plaintiffs' Exhibit R, which is cited in paragraph 39 of the Plaintiffs' Statement of Undisputed Facts." That document is from 1974 – 35 years ago – and does not incorporate current thinking on the subject of silica standards, is a recommendation only

(*see* Preface, at 1), and says nothing about showering or clothes doffing at the end of shift (*see* Section VI. Work Practices at 85-88).

32. The inclusion of NIOSH and ACGIH guidance levels in paragraphs 48 through 52 of the Plaintiffs' "Statement of Undisputed Facts" provide a comparison range, but neither NIOSH nor ACGIH levels are enforceable. OSHA standards are the only standards that are enforceable. In addition, when workers leave the workplace and go home, neither OSHA nor any other organization is in a position to monitor or regulate non-workplace exposures.

#### **SECTION 4. PERSONAL PROTECTIVE EQUIPMENT (PPE) AND THE INTERPRETATION OF INDUSTRIAL HYGIENE MEASUREMENTS**

33. As noted above, in the process of reviewing and assessing the health programs at Waupaca, I participated in a walkthrough of Plants 2 and 3 including the employee changing facilities, administrative offices, and the work areas. The walkthrough clearly indicated that the plant is made up of a series of sections, some of which appear to be operation-specific, whereas other areas appear to have arisen more as a convenience or as a result of years of expansion.

34. The reference to "large open areas within the plants" made in paragraph 21 of Plaintiffs' "Statement of Undisputed Facts" fails to describe the doors, ramps and walkways that separate one operational area from another. Visual inspection of the Plant 2 and 3 facilities clearly indicated separate and distinct work areas that could be identified as requiring unique PPE. The areas and departments where specific and unique PPE were required were posted in accordance with Waupaca's PPE policy, and this unique PPE was made available to the workers to don and doff in their departments while on the clock.

35. The utilization of company-supplied uniforms does not in and of itself constitute the use of PPE, and must be evaluated on an individual basis. For example, although a bakery or

food processing facility might require hair nets and clean jump suits, the purpose is for food quality protection rather than protection of employee health.

36. In paragraph 15 of Plaintiffs' "Statement of Undisputed Facts," it is correctly pointed out that eye protection, foot protection, and head protection are used in the foundry setting. These items are non-unique forms of PPE that are used across very diverse groups of worksites and industries. The selection of PPE for a worker is dictated by the work processes in their area. Workplaces with unusual exposures require unique PPE with protective qualities specific to the hazards of that workplace. That is to say, unique work environments require PPE with unique and specialized qualities.

37. Examples of items that would be unique to specific areas of the foundry are reflective turnout gear, safety glasses with colored lenses for eye protection when working around furnaces, respirators, and insulated gloves. Standard cotton uniforms would not be considered unique in the foundry setting. In the case of Waupaca's worker dress code, workers can supply their own cotton work clothes if they so desire.

38. Waupaca has a policy of environmental sampling by an Industrial Hygienist. Contrary to the statement in paragraph 22 of Plaintiffs' "Statement of Undisputed Facts," Waupaca follows a policy of posting the results of industrial hygiene sampling data in departments and in other prominent places within the plant along with an explanation of the results. In addition, the industrial hygiene sampling is done with the employees present and in many cases the employees are wearing the sampling device during the process.

39. Waupaca's employees have the opportunity to see the sampling take place and have access to the data as part of the company's Hazard Communication Program. This program, which includes the availability of MSDS sheets, makes it highly unlikely that the

employees are unaware of the presence of silica in the air in certain portions of the plant, and they are aware that the use of a respirator is required while participating in specific jobs.

40. It is well known in the foundry industry and in the occupational health professions that there are potential health effects of silica exposure at levels over the PEL set by OSHA. The point that is lost in this discussion in paragraphs 24 and 25 of Plaintiffs' "Statement of Undisputed Facts" is that the mere presence of silica in the environment is not associated with adverse health effects.

41. Such adverse health effects may occur when the presence of silica in the air is at a sufficient level, combined with the worker's respiratory system being unprotected for a period of time long enough for the protection system of the body's respiratory tract to be overwhelmed. In addition, the silica particle size has a significant impact on the potential effects on the worker.

42. Three levels of quartz grain size are typically monitored, each with a different capacity for infiltrating the body. Because it is a particulate, and not a gas or vapor, to be inhalable, quartz particles must erode down to less than 0.1 mm (0.004 in.) where they are capable of entering the upper airways. When the grains become smaller than 0.01 mm (0.0004 in.), they can enter the throat, and when they are half that size, 0.005 mm (0.0002 in.), they become respirable and capable of penetrating the lung. It is this respirable quartz that can be associated with serious illness. Moreover, this latter type of silica is dangerous to human health only when it becomes airborne. Because silica is ubiquitous and present in the ambient air, Waupaca's workers – like everyone else – will always have some levels of exposure to silica.

43. In short, the mere presence of silica in the environment does not constitute a hazardous level of exposure. It is often taught in the toxicology books that the most important part of an assessment of exposure is "dose, dose, dose." Paracelsus, sometimes called the father

of toxicology, wrote: "All things are poison and nothing is without poison, only the dose permits something not to be poisonous." That is to say, substances often considered toxic can be benign or beneficial in small doses, and conversely an ordinarily benign substance can be deadly if over-consumed. Even water and salt can be deadly if consumed in abnormally large quantities.

44. Paragraphs 26 and 27 of Plaintiffs' "Statement of Undisputed Facts" do not adequately reflect operations at Plants 2 and 3 of Waupaca, and there is no reason to believe that these statements are any more reflective of other Waupaca foundry operations. The potential for respirable silica dust must be assessed through workplace and work process evaluations. The generalization of silica risk would be inappropriate given the different processes within these foundries and the layout of these facilities.

45. It is recognized that some types of foundry work are known to be associated with the potential for the generation of respirable silica during specific processes, but not all processes normally found in a foundry involve silica exposures. That is why foundries implement industrial hygiene monitoring programs, the cornerstone of which is environmental sampling to identify areas where workplace controls need to be implemented.

46. Waupaca has a regular industrial hygiene monitoring program in place that includes a workplace assessment process that identifies the areas where respiratory protection is warranted. This program has been in place for 16 years in its current form at Waupaca (the company has, however, done sampling under previous programs since 1974), it has been reviewed by OSHA and no citations have ever been given for deficiencies in the program.<sup>2</sup> Indeed, I saw no evidence of OSHA ever making a recommendation that Waupaca change the overall structure of its industrial hygiene monitoring program.

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<sup>2</sup> Waupaca has, on occasion, received OSHA citations for above the PEL workstations. But none of those citations have been critical of the company's overall program itself.

47. Workplace evaluation of the type of silica, its concentration, and the duration of potential employee exposures are all necessary and indispensable elements to assessing the risk of developing silica related disease. The scientific literature clearly indicates there is a continuum of clinical illness associated with actual exposure to increasing levels of respirable silica dust. The active respiratory protection program at Waupaca prevents those exposures associated with clinical illness.

48. The professional literature regarding the foundry industry clearly indicates that silica is used in these facilities and that it has been an emphasis area of OSHA. The key point that is not addressed in paragraph 35 of Plaintiffs' "Statement of Undisputed Facts" is that Waupaca has a robust and active industrial hygiene program to measure silica levels in the foundry that is used to guide control efforts. Waupaca has successful processes in place to identify potential hazards and take appropriate steps to eliminate the potential for exposure (i.e., engineering, substitution, or personal protection equipment).

49. The OSHA regulations incorporate duration of exposure, level of exposure, and percentage of silica in the dust in the formulation of the PEL, but OSHA standards do not discuss "perpetual exposure." Likewise, there is no standard or regulation relating to "perpetual exposure" in the discussion by NIOSH or ACGIH.

50. Paragraphs 48 through 52 of Plaintiffs' "Statement of Undisputed Facts" do not adequately reflect the worksite evaluation program that has been followed at Waupaca, which was designed to identify areas where exceedances in silica levels in the air were likely to take place. This effort resulted in actions consistent with the OSHA standards set to provide a safe workplace.

51. Waupaca has made engineering modifications where necessary and has maintained a robust respiratory protection program to protect its employees, including hazard communications, environmental air filtration, respiratory fit testing, and medical monitoring as delineated in the OSHA silica standards. Some exceedances are inevitable in processes like those found in a foundry. The industrial hygiene driven sampling program is set up to identify areas where exceedances are likely to occur in order to identify actions that can be taken to prevent worker exposures.

52. The statements made in Section IX of Plaintiffs' "Statement of Undisputed Facts" regarding the use of the cupola and the dust that is generated through its use should be clarified. The cupola is often seen as the symbol traditional foundry work; however, it is only one part of the foundry process. Iron melting is often done in a cupola. Scraps of iron, coke, and limestone, charged in layers, provide the raw material. Melting of the cupola contents often attains temperatures of 1200–1450°C and often requires 5 to 6 hours, depending on the capacity of the cupola and the methods employed. The molten iron is poured into molds.

53. The dust associated with the use and maintenance of the cupola often contains silica. This is a known part of foundry work, and engineering controls, work process controls, and respiratory protection programs are routinely implemented in foundry in a fashion similar to what is done in the Waupaca foundry. The monitoring of the work environment using the industrial hygiene techniques employed at Waupaca will detect the silica contributed as a result of the use of cupolas in the foundry process.

## **SECTION 5. MSDS: CONTENT AND USE**

54. In general, Material Safety Data Sheets or MSDSs are intended to provide a comprehensive source of written information about the properties, handling, and transport of

chemical reagents. All manufacturers are required to provide users with an MSDS for each reagent that they sell.

55. In practice, however, there are problems with the quality of information on some MSDSs, which has led to criticism of the use of MSDSs by labor organizations and the research community.

56. Under the Hazard Communication Standard, the MSDS was made a central part of the effort to communicate chemical hazards in the workplace. A wide variability in quality has evolved as MSDS have grown in application. There are no requirements regarding the scientific quality of MSDSs, and the growth of product liability litigation concerns have created a situation where pressures to include perceived, but undocumented, effects of certain materials have greatly affected the content of MSDSs. Producers of chemicals are subject to MSDS-based "failure to warn" suits that can have significant financial implications. These U.S. legal implications affect the length and complexity of MSDSs, as well as the way in which information is presented.

57. In 1991, OSHA commissioned two studies relating to the quality of information provided on MSDSs (Kolp et. al. 1993 and Kolp et al. 1995, see attached). The first study examined the accuracy of MSDSs (i.e., the correctness and completeness of the information provided). The second study evaluated the comprehensibility of MSDSs by workers (i.e., the ability of workers to understand the information presented).

58. The study pertaining to the accuracy of MSDSs examined information presented in five areas considered crucial to the health of workers potentially exposed to hazardous substances. These five areas assessed were chemical identification of ingredients; reported health effects of ingredients; recommended first aid procedures; use of personal protective

equipment; and exposure level regulations and guidelines. The evaluation of 150 MSDSs was performed jointly by a board certified occupational physician and a toxicologist who was also a certified industrial hygienist.

59. Based on the chemical ingredients identified, the accuracy in the other four areas of concern was evaluated based on information obtained from readily available reference sources. The evaluation indicated that 37% of the MSDSs examined accurately identified health effects data, 76% provided complete and correct first aid procedures, 47% accurately identified proper personal protective equipment, and 47% correctly noted all relevant occupational exposure limits. Only 11% of the MSDSs were accurate in all four information areas, but more (51%) were judged inaccurate, or considered to include both accurate and partially accurate information.

60. The published literature and lay press both have highlighted the disparity in quality and content of MSDS as they have evolved and as the demand for additional information about chemicals in the workplace has increased. There are a number of common themes that have emerged regarding inaccuracies, incompleteness, incomprehensibility, and overall low use of MSDSs. A review of the literature suggests that there are serious problems with the use of MSDSs as hazard communication tools and indicators of a chemical's risk in the workplace.

61. I have reviewed a number of the MSDSs that are referenced by the Plaintiffs. For many if not most of these MSDSs, the recommendation to wash exposed skin with water is not due to the presence of silica (or some silica derivative) in the product, but it is due to something else about the product that makes washing a recommendation.

62. Silica, like virtually every other compound, can cause skin irritation to some people under some circumstances. In those instances, it is appropriate to wash the irritated skin

with soap and water. This does not mean, however, that all contact with silica requires skin washing, much less showering. Indeed, in the vast majority of the circumstances where foundry workers are exposed to silica, skin washing is not necessary.

### **Conclusions**

63. In a review of the employee health recommendations of OSHA regarding silica in the workplace, I found no enforceable regulation or recommendation stronger than "shower if available." Both NIOSH and ACGIH have formulated guidelines or recommendations covering silica exposure in the workplace and neither addresses a requirement to shower or doff clothing on premises after working with silica, or makes a strong argument for OSHA to consider adding a showering and doffing requirement to the regulations covering silica exposures in the workplace.

64. It would be unlikely that any health professional would disagree with the idea of an employee wishing to shower and change clothes after work in a foundry. However, there is no peer-reviewed, published literature that provides support for a policy of mandatory showering or clothes doffing after work with silica in a foundry setting.

65. Similarly, there is no scientific support for proposition that workers who do not shower or doff their clothing at the end of the day after working in a foundry setting, are more at risk for adverse health consequences due to the presence of silica on their clothing or their person. There is also nothing in the relevant scientific literature suggesting that exposure to silica on clothing that is brought home after work, or that is found in an automobile as a result of contact with dirty clothing, is a health or safety concern.

**VERIFICATION PURSUANT TO 28 U.S.C. §1746**

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 15<sup>th</sup> day of October, 2009.



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MARK A. ROBERTS, M.D., Ph.D., FACOEM